

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA

UNITED STATES OF AMERICA,

Plaintiff,

v.

HENRY CERVANTES, et al.,

Defendants.

**No. CR 12-792 YGR**

**ORDER REGARDING  
MOTIONS RELATING TO  
ARSON, DNA, AND CELL  
PHONE LOCATION  
EXPERTS**

**RE: DOCKET NOS. 668,  
699, 669, 664**

Defendant Henry Cervantes (“H. Cervantes”) objects to the government’s disclosure of expert information and moves to exclude or limit the testimony of arson or fire investigation experts (Dkt. Nos. 668, 699).<sup>1</sup> H. Cervantes also moves to exclude or limit DNA related expert testimony (Dkt. No. 669).<sup>2</sup> The government opposes the motions. The Court previously granted H. Cervantes’s motions as to their requests for a *Daubert* hearing. (Dkt. No. 728.) The Court held a *Daubert* hearing on October 13, 2015.

Having considered the papers submitted, the record in this case, and the arguments of counsel at the hearing, the Court **DENIES** H. Cervantes’s motion to exclude arson expert testimony relating to burn patterns; smoke, heat, and fire damage in each room of the Coolidge Avenue apartment; indications of the occurrence of separate fires with separate causes in the apartment; and elimination of possible fire causes in each room (Dkt. No. 668, 699). The Court **GRANTS** his motion to exclude arson expert testimony relating to the smell of gasoline during the investigation, but **DENIES** the motion to the extent the arson expert provides lay opinion testimony regarding what she smelled and the jury is instructed appropriately. The Court finds inadequacies in the

<sup>1</sup> Alberto Larez (Dkt. No. 671) and Jaime Cervantes (Dkt. No. 672) joined in H. Cervantes’s motion.

<sup>2</sup> Larez (Dkt. No. 671) and J. Cervantes (Dkt. No. 672) joined in H. Cervantes’s motion.

1 government's disclosure relating to this expert, but as discussed below, declines to sanction the  
2 government under Rule 16. The Court **DENIES** H. Cervantes's motion to exclude or limit  
3 government DNA related expert testimony (Dkt. No. 669).

4 In addition, H. Cervantes previously moved to exclude or limit the testimony of FBI or  
5 Other Witnesses Testifying About Cell Phone Communications and Locations (Dkt. No. 664),<sup>3</sup> and  
6 the Court RESERVED ruling on the admissibility of any opinions on the basis of field tests pending  
7 review of any supplemental declaration by Special Agent Nguyen (Dkt. No. 728 at 16). Having  
8 considered Special Agent Nguyen's supplemental declaration filed on October 14, 2015 (Dkt. No.  
9 758),<sup>4</sup> the Court **DENIES** H. Cervantes's motion as to testimony on such opinions.

#### 10 **I. ARSON EXPERT**<sup>5</sup>

11 In a July 2015 order, the Court denied the defense's Rule 16(a)(1)(G) motion as to the  
12 government's prior arson expert disclosures. (Dkt. No. 680 at 3–4.) The government's disclosure  
13 letter stated that the bases for the experts' opinions included "examination, burn patterns, witness  
14 statements, and the use of a hydrocarbon detector," and provided each expert's curriculum vitae.  
15 (Dkt. No. 680 at 3–4.) The Court found that the defense failed to make a sufficient showing for  
16 additional disclosures, noting that the government's disclosure incorporated the analysis found in  
17 disclosed Oakland Fire Department reports and that H. Cervantes moved for supplemental  
18 disclosure "out of an abundance of caution." (Dkt. No. 680 at 4; *see* Dkt. No. 645 at 9–10 (H.  
19 Cervantes noting that "it is becoming apparent that the Government has no further information to  
20 offer . . .").)

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23 <sup>3</sup> Larez (Dkt. No. 671) and J. Cervantes (Dkt. No. 672) joined in H. Cervantes's motion.

24 <sup>4</sup> The government filed a supplemental declaration on the October 9, 2015 deadline for this  
25 filing (Dkt. No. 753), but filed the declaration again on October 14, because the prior version  
26 lacked a signature.

27 <sup>5</sup> Given the addition of Andrew Cervantes to this case, the Court's rulings on this matter  
28 also apply to any joint trial in this case with A. Cervantes irrespective of whether he joins the  
motion.

In September, the Court granted H. Cervantes’s motion to exclude or limit the testimony of alleged arson or fire investigation experts, concluding that a *Daubert* hearing was necessary to determine whether to admit expert testimony, including opinions about (1) the presence of accelerants; (2) hydrocarbon detector device readings; and (3) the significance of burn patterns. (Dkt. No. 728 at 8–11, 16.) The government had disclosed an Oakland Fire Department report citing the National Fire Protection Association (“NFPA”) 921 standard, “Guide for Fire and Explosion Investigations,” in the context of a “Murder-Concealment” inference,<sup>6</sup> but otherwise, the report contained limited information about the bases for the report writer’s opinions and the NFPA 921 standards. (See Dkt. No. 728 at 9–10.) Pursuant to the Court’s order, the government filed notice that it would “seek to introduce [evidence related to an arson expert], whether through common observation, lay opinion, or expert opinion of the fire investigators.” (Dkt. No. 738 at 1–2.) “In addition, and particularly with respect to the fire investigators’ observations that they smelled gasoline (an ‘ignitable fluid’), the [government] reserve[d] its right to introduce the statements as lay opinion.” (*Id.* at 2.)

This Court ordered a *Daubert* hearing. At the hearing, the government did not proffer testimony relating to a hydrocarbon detector or laboratory testing of any samples of physical evidence taken from the scene. The Court discusses below the arson expert opinions that remain at issue.

#### A. DISCLOSURES

H. Cervantes objects to the government’s Rule 16(a)(1)(G) disclosures, given the nature of the testimony regarding arson investigation methods at the *Daubert* hearing.

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<sup>6</sup> “NFPA 921 is promulgated by the Technical Committee of the National Fire Protection Association (‘NFPA’), the largest fire protection organization in the world and is widely accepted as the standard guide in the field of fire investigation.” *United States v. Hebshie*, 754 F. Supp. 2d 89, 111 n.39 (D. Mass. 2010).

1 Rule 16(a)(1)(G) of the Federal Rules of Criminal Procedure requires the government to  
2 give defendants a “written summary of any testimony” of an expert witness the government intends  
3 to introduce in its case-in-chief during trial under Federal Rules of Evidence 702, 703, or  
4 705. The government’s summary “must describe the witness’s opinions, the bases and reasons for  
5 those opinions, and the witness’s qualifications.” Fed. R. Crim. P. 16(a)(1)(G). A district court  
6 may order expert disclosures from the government that are “complete, comprehensive, accurate,  
7 and tailored to the issues on which the expert is expected to testify,” and can also exercise its  
8 discretion to direct the government to “identify the documents or information that the expert  
9 reviewed in preparing his or her report . . . .” *United States v. W.R. Grace*, 526 F.3d 499, 503–16  
10 (quotation marks omitted).

11 As other courts have noted, the Advisory Committee Note to the 1993 Amendment of Rule  
12 16 indicated “that the bases and reasons must be sufficient to allow counsel to frame a *Daubert*  
13 motion (or other motion in limine), to prepare for cross examination, and to allow a possible  
14 counter-expert to meet the purport of the case-in-chief testimony.” *United States v. Cerna*,  
15 2010 WL 2347406, at \*1 (N.D. Cal. 2010) (quotation marks omitted). “The comment also stated,  
16 however, that where a witness is so ‘generic’ and routine (such as a DEA laboratory chemist) that  
17 the testimony will be largely predictable, a shorthand summary of the witness’s qualifications and  
18 testimony may be adequate.” *Id.* Thus, Rule 16 requires that the government summarize each  
19 specific opinion to be offered along with the basis for it. *Id.* at \*8.

20 The government’s Rule 16 disclosures did not suffice to allow H. Cervantes to frame his  
21 *Daubert* motion before the hearing because they did not indicate how arson investigators followed  
22 the NFPA 921 methodology in reaching their opinions and because the government’s expert  
23 testified to using that methodology in ways not previously disclosed. *See Cerna*, 2010 WL  
24 2347406, at \*1. The government disclosed an Oakland Fire Department report. (*See* Dkt. 705,  
25 Fire Investigation Report at NF-000772–000777.) The report references NFPA 921 regarding  
26 “Murder-Concealment.” The report concludes with an “Opinion” section that reads in full:

27 Upon concluding my investigation at this time, based on my fire scene examination,  
28 burn patterns and witness statements, it is my determination that the ignition source  
was ignitable liquid vapors originating from a liquid substance which was poured on

the cloth items on and/or near the bodies. The flame was most likely provided by a cigarette lighter which was found at the scene. It is my opinion that the materials first ignited in the fire on the female victim were the cloth materials around her body. It is my opinion that the materials first ignited in the fire with the victim were bedding, clothing, and the mattress near his body.

In conclusion - It is my determination that these fires were intentionally set by a person or persons unknown to me at this time with the intent of concealment of the murders [NFPA92I 22.4.9.3.5\*A] - Murder Concealment] of the two victims. The fires were incendiary.

(*Id.* at NF-000777.) In opposition to H. Cervantes's motion to exclude arson expert testimony, the government indicated broader reliance by investigators on the NFPA 921 methodology: "the Government expects these investigators to testify how the fire investigation was done in accordance with the basic principles of the NFPA 921 . . . and that the evidence they observed and photographed at the scene was consistent with arson and murder concealment (NFPA 921, at 22.4.9.3.5\*A)." (Dkt. No. 693 at 4.) At the hearing, the government did not seek to introduce a "Murder Concealment" opinion. The government also declined to seek to admit any evidence from a hydrocarbon detector used at the scene. The government proffered testimony from Maria Sabatini of the Oakland Fire Department that she followed the NFPA 921 methodology for gathering data, analyzing the data, and developing and testing hypotheses, generally, independent of the "Murder Concealment" section in the NFPA 921.

Sabatini testified regarding twenty-three photos taken of the Coolidge Avenue apartment after the September 2011 fire. She also testified regarding pages of the previously disclosed Oakland Fire Department report. Investigator Bonnie Cox of the Oakland Fire Department wrote the report. (*See* Dkt. 705, Fire Investigation Report at NF-000772–000777.) The report indicates that Cox "took photos throughout [the building]." (*Id.* at NF-000772; *see also id.* at NF-000777 ("Photographs taken: Investigator B. Cox, Acting Investigator F. Bryant, OPD Tech").) The investigation occurred "from outside [of the building] to inside and from areas suspected of having the least damage to areas of greater damage with emphasis on recognition, identification, and analysis of fire and heat patterns." (*Id.* at NF-000774.)

Sabatini supported Cox, and testified that she independently developed her conclusions, but agreed with Cox. Sabatini did not create notes at the time of the investigation. Cox's report describes each room and includes opinions about the presence or absence of "causes" of fires in

each.<sup>7</sup> Sabatini, by contrast, opined about the location of areas of origin of separate fires, separate causes of separate fires, and her elimination of specific alternative potential causes (e.g., cigarettes, electricity, combustible materials). For instance, Sabatini testified that a curtain in the bathroom was intact, indicating insignificant heat damage in that room. Also, Sabatini noted that the kitchen showed smoke deposits, but no burn patterns that she would associate with the fire originating in the room and that a microwave appeared to have been burned without damage around it that would indicate that a fire originated inside of it. In sum, Sabatini relied on the NFPA 921 methodology for more than the section referenced in the Oakland Fire Department report on “Murder Concealment,” and explained how she ruled out potential alternative causes of the fires at the scene and how she found separate areas of origin of two fires, independent of hydrocarbon detector readings. Sabatini therefore provided opinions and bases for opinions not included in the government’s Rule 16 disclosures.

Although the government’s disclosures were wanting, the Court declines to sanction the government by excluding the evidence.

If a party fails to comply with this rule, the court may: (A) order that party to permit the discovery or inspection; specify its time, place, and manner; and prescribe other just terms and conditions; (B) grant a continuance; (C) prohibit that party from introducing the undisclosed evidence; or (D) enter any other order that is just under the circumstances.

Fed. R. Crim. P. 16(d)(2). The government conceded at the hearing that it would not seek to admit evidence independent of that observed by Sabatini or in photographs mentioned in the report. This concession simplifies the testimony because the government no longer proffers evidence from a “Hydrocarbon Sniffer” and acknowledges that it has no laboratory analyses of physical samples from the scene. Further, H. Cervantes cross-examined Sabatini on her methods and observations,

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<sup>7</sup> For instance, the report states that the kitchen “showed smoke and heat damage. I found no causes for the fires in this room.” (*Id.* at NF-000775.) And: “On the south side of the house there was a closet and a bathroom which showed smoke and heat damage. I found no causes for the fires in these rooms.” (*Id.*) Also, a bedroom in the southwest corner of the building “had a wooden door with the top panel burned through.” (*Id.*) At the foot of the door “was a melted plastic toolbox.” (*Id.*) According to the report: “There were no causes of the fires found in this room. The burn patterns on the exterior of the door and in the interior of this room indicated that the heat came from the room at the northwest corner.” (*Id.*)

1 including on the appropriate methods outlined in the NFPA 921. And, since the *Daubert* hearing,  
2 the trial has been continued from January to May 2016, permitting H. Cervantes additional time to  
3 prepare to attack the weight of the testimony at trial.

4 B. *DAUBERT*

5 At the hearing, the government narrowed its proposed expert testimony to include fire or  
6 burn patterns; the presence of smoke and heat damage in certain bedrooms; indications of the  
7 occurrence of separate fires with separate causes in the apartment; elimination of cigarette  
8 smoking, electrical, and combustion causes of the fires; and an investigator smelling gasoline (as  
9 expert opinion or, in the alternative, as lay opinion). H. Cervantes suggests that expert testimony  
10 on the basis of observations, without corroborating physical evidence, is unreliable. (Dkt. No. 699  
11 at 2–3.) H. Cervantes also challenges the expert testimony as a “kind of technical ‘expertise’ . . .  
12 subject to exclusion, not only under *Kumho Tire* and Rule 702, but also under F.R.E. 403.” (Dkt.  
13 No. 668 at 9.) For the reasons below, the Court **DENIES IN PART** H. Cervantes’s motion.  
14 Separately, the Court excludes as not expert testimony Sabatini opining that she smelled gasoline.<sup>8</sup>

15 “In federal courts, the admission of expert testimony is governed by Federal Rule of  
16 Evidence 702, as elucidated by the Supreme Court in *Daubert*.” *Barabin v. AstenJohnson, Inc.*,  
17 700 F.3d 428, 432 (9th Cir. 2012). Federal Rule of Evidence 702 allows expert testimony only if  
18 the expert’s “scientific, technical, or other specialized knowledge will help the trier of fact to  
19 understand the evidence or to determine a fact in issue.” Fed. R. Evid. 702. Rule 702 permits  
20 experts to testify if their testimony is: (1) “based upon sufficient facts or data,” (2) “the product of  
21 reliable principles and methods,” and (3) the result of applying those principles and methods  
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23 <sup>8</sup> Given the arguments at the hearing, that the government does not seek to introduce any  
24 laboratory testing results, and that the government has limited the extent of its expert testimony, the  
25 Court does not understand the government to seek to admit opinion testimony that the fires were  
26 incendiary or consistent with “murder concealment.” *See* Fed. R. Evid. 702 (permitting testimony  
27 if, in relevant part, the expert’s scientific, technical, or other specialized knowledge will help the  
28 trier of fact to understand the evidence or to determine a fact in issue”); *Hebshie*, 754 F. Supp. 2d  
at 124 (noting in a *Strickland* case: “As to the . . . testimony—that the fire was arson—there is  
surely a ‘reasonable probability’ of exclusion. Without a valid accelerant laboratory test, . . . [an]  
opinion[] that the fire was incendiary was simply not reliable”).



1 reliably to the facts of the case. *Id.* In determining whether an expert’s testimony meets the  
 2 standards of Rule 702, the court acts as a “gatekeep[er]” that “ensur[es] that [the] expert’s  
 3 testimony both rests on a reliable foundation and is relevant to the task at hand.” *Daubert v.*  
 4 *Merrell Dow Pharms., Inc.*, 509 U.S. 579, 597 (1993); *see also Kumho Tire Co. v. Carmichael*, 526  
 5 U.S. 137, 148–49 (1999). In addition, expert testimony that is “otherwise admissible may be  
 6 excluded under Rule 403 if its probative value is substantially outweighed by the danger of unfair  
 7 prejudice, confusion of the issues, or misleading the jury.” *U.S. v. Rincon*, 28 F.3d 921, 923 (9th  
 8 Cir. 1994) (citing *Daubert*, 509 U.S. at 595).

9 The Ninth Circuit has reiterated, “[w]hen an expert meets the threshold established by Rule  
 10 702 as explained in *Daubert*, the expert may testify and the jury decides how much weight to give  
 11 that testimony.” *Primiano v. Cook*, 598 F.3d 558, 564–65 (9th Cir. 2010). “Shaky but admissible  
 12 evidence is to be attacked by cross examination, contrary evidence, and attention to the burden of  
 13 proof, not exclusion.” *Id.* at 564.

14 Sabatini is qualified to testify on her application of the NFPA 921 methodology in the  
 15 Coolidge Avenue fire investigation. Sabatini has been employed as a Fire/Arson Investigator since  
 16 2005. She has investigated over 750 fires. She was certified as a fire investigator by the  
 17 International Association of Arson Investigators, by the National Board on Fire Service  
 18 Professional Qualifications, by the California State Fire Marshall (certified as Level II, highest  
 19 level), and the California Conference of Arson Investigators in 2007 and 2008. She has testified as  
 20 an expert witness on fifteen occasions in both criminal and civil cases, all in Alameda County  
 21 Superior Court. Her training includes training by the California Fire Service Training and  
 22 Education System, including forty hours on “Fire Origin and Cause Determination” and forty hours  
 23 on “Techniques of Fire Investigation.” She also completed sixteen hours of “Live Burn and Fire  
 24 Investigation Procedures and Techniques” and an additional ten hours of “Live Burn and Fire  
 25 Investigation” with the California Fire Chiefs Association/Fire Prevention Officers Association.  
 26 With the Alameda County District Attorney’s Arson Task Force, she completed a ten-hour “Live  
 27 Burn and Fire Investigation Class” in 2006. In 2002 and again in 2008, she completed “Advanced  
 28 Fire/Arson Investigation” trainings lasting twenty hours each. In 2012 and 2014, she completed



1 “NFPA 921” updates. She also completed “tested training” with the International Association of  
2 Arson Investigators and CFITrainer.net. Because of Sabatini’s experience with the Oakland Fire  
3 Department since 2005, investigations of over 750 fires, and her education and training on  
4 investigating causes of fires, the Court finds that Sabatini is qualified to testify as an expert on fire  
5 investigation.

6 Sabatini applied the methodology set out in the NFPA 921 in making her observations  
7 inside the Coolidge Avenue apartment. Under the NFPA 921, “Investigators are directed that ‘no  
8 specific hypothesis can be reasonably formed’ until all relevant evidence is collected and all  
9 hypotheses must be based on data that is ‘capable of being verified.’” *Hebshie*, 754 F. Supp. 2d at  
10 111 n.39 (quoting NFPA 921 (2001) §§ 2.3.1–2.3.7).

11 The NFPA 921 sets forth professional standards for fire and explosion  
12 investigations and provides a six step process in which an investigator must: (1)  
13 recognize that a need exists to determine what caused the fire; (2) define the  
14 problem; (3) collect data; (4) analyze the data; (5) develop a hypothesis based on the  
15 data; and (6) test the hypothesis.

14 *Royal Ins. Co. of Am. v. Joseph Daniel Const., Inc.*, 208 F. Supp. 2d 423, 426 (S.D.N.Y. 2002).

15 “The data collected is called empirical data because it is based on observation or experience and is  
16 capable of being verified or known to be true.” NFPA 921 (2011) § 4.3.3. After analyzing data  
17 collected, the NFPA 921 instructs that investigators develop hypotheses, which “should be based  
18 solely on the empirical data that the investigator has collected through observation and then  
19 developed into explanations for the event, which are based upon the investigator’s knowledge,  
20 training, experience, and expertise.” *Id.* § 4.3.5. Then, the investigator tests a hypothesis “either  
21 physically by conducting experiments or analytically by applying scientific principles in ‘thought  
22 experiments.’” *Id.* § 4.3.6. The NFPA 921 describes a fire’s “origin” as “one of the most  
23 important hypotheses that an investigator develops and tests during the investigation.” *Id.* § 17.1.  
24 “Testing any origin hypothesis requires an understanding of the associated fire events as well as the  
25 growth of the fire and how the fire spread through the structure. A narrow focus on only  
26 identifying the first item ignited and a competent ignition source fails to take into account  
27 important data that can be used to test any origin hypothesis.” *Id.* § 17.2.1.  
28

1 According to the NFPA 921, “[t]horough and accurate documentation of the investigation is  
2 critical because it is from this compilation of factual data that investigative opinions and  
3 conclusions will be supported and verified.” *Hebshie*, 754 F. Supp. 2d at 125 n.56 (quoting NFPA  
4 921 (2001) § 13.1). ““A visual documentation of the fire scene is the most efficient reminder[ ] of  
5 what the investigator saw while at the scene. Patterns and items may become evident that were  
6 overlooked at the time the photographs or videos were made.”” *Id.* (quoting NFPA 921 (2001)  
7 § 13.2) (some quotation marks omitted).

8 Sabatini’s testimony regarding fire or burn patterns; the presence of smoke and heat  
9 damage in certain rooms; indications of the occurrence of separate fires with separate causes in the  
10 apartment; and elimination of cigarette smoking, electrical, and combustion causes of fire is  
11 admissible. Sabatini acknowledged that she based her conclusions on observations in accordance  
12 with the NFPA 921’s general guidance on the scientific method, but that no physical samples from  
13 the scene were subjected to laboratory testing. Also, the government declined to proffer evidence  
14 from a hydrocarbon sniffer noted in Cox’s report. Instead, Sabatini based her conclusions on  
15 observations consistent with multiple fires occurring with separate origins, and ruling out  
16 alternative possible causes. Sabatini did not write a report at the time of the investigation, but  
17 testified that she reviewed the photos taken at the scene and reached conclusions independent of  
18 those reached by the report writer, Cox. Sabatini considered burn, smoke, and gas damage.  
19 Sabatini found no candles, incense, or household materials that might combust. Although there  
20 was a pack of cigarettes on a dresser in one bedroom, she found no evidence of a smoldering  
21 cigarette and considered it improbable to have two smoldering cigarettes in different places inside  
22 one apartment. The Court previously required clarification because Cox’s report included  
23 conclusions about causes of fires by noting “smoke and heat damage” without indicating whether  
24 some rooms contained fire damage. (*See* Dkt. No. 728 at 10.) At the hearing, Sabatini noted that  
25 the kitchen showed smoke deposits, but no burn patterns that she would associate with the fire  
26 originating in the room. She noted that a microwave appeared to have been burned, but that there  
27 was no damage around it that would indicate that a fire originated inside the microwave. And  
28 regarding a bathroom, a curtain inside was intact, indicating no significant heat damage.

1 Thus, the defense does not demonstrate that Sabatini's application of the NFPA 921  
2 methodology and testimony in this case is unreliable under *Daubert*.

3 C. SMELL OF "GASOLINE" AND LAY WITNESS OPINION

4 The government seeks to admit that Sabatini smelled gasoline as expert opinion testimony  
5 or, in the alternative, as lay witness opinion under Rule 701.

6 First, the Court finds that Sabatini's testimony regarding a smell she associated with  
7 gasoline is not properly admissible as expert testimony. Sabatini testified at the hearing that she  
8 smelled "gasoline" in the area of each body. Regarding a bedroom where a female victim's body  
9 was found, Cox's report indicates "an odor of ignitable liquid on her body and an odor of ignitable  
10 liquid on the cloth on and around her body." (Dkt. No. 705 at NF-00775.) Then, the report states:  
11 "It appears most likely that the fire in this room was caused intentionally by someone pouring  
12 ignitable liquid on the clothing of the female victim and lighting the vapors with a cigarette lighter  
13 as the source of flame." (*Id.*) Also, the report describes a room at the northwest corner that  
14 contained a male victim's body. (Dkt. No. 705 at NF-000776.) The report states: "I was able to  
15 smell the odor of an ignitable liquid when the Coroners lifted the body." (*Id.*) Further, the report  
16 states about the mattress on which the body was found: "There was some unburned clothing under  
17 the body. It smelled of ig[n]itable liquid. We took a piece of this cloth . . . ." (*Id.*)

18 Although the NFPA 921 permits investigators to observe all aspects of a fire scene, the  
19 government fails to demonstrate that Sabatini based her opinion that what she smelled was gasoline  
20 on "scientific, technical, or other specialized knowledge . . . ." Fed. R. Evid. 702. Although  
21 Sabatini noted that gasoline was used during training sessions, she relied "somewhat" on that  
22 experience and "primarily" on her experience going to a gas station to fill her car's gas tank to  
23 explain how she identified the smell at issue as gasoline. And she does not identify specific  
24 training in distinguishing among smells or in identifying an ignitable liquid on the basis of a smell.  
25 Also, Sabatini testified that samples were collected to conduct laboratory tests on whether ignitable  
26 liquid was present, but that no such tests were conducted. Accordingly, the Court declines to admit  
27 Sabatini's testimony that she smelled gasoline as expert testimony.  
28

1 Alternatively, the government seeks to admit the testimony as lay witness opinion. “If a  
2 witness is not testifying as an expert, testimony in the form of an opinion is limited to one that is:  
3 (a) rationally based on the witness’s perception; (b) helpful to clearly understanding the witness’s  
4 testimony or to determining a fact in issue; and (c) not based on scientific, technical, or other  
5 specialized knowledge within the scope of Rule 702.” Fed. R. Evid. 701. “While lay witnesses  
6 can testify as to smells that are considered within common knowledge, they may not draw  
7 distinctions, absent expertise, that is not within the knowledge of the ordinary person.” 3  
8 Wharton’s Criminal Evidence § 12:11 (15th ed.) (footnote omitted). The government relies on  
9 *United States v. Durham*, 464 F.3d 976 (9th Cir. 2006), in which a defendant argued that  
10 permitting testimony by a witness that a “burnt residue was, or contained, marijuana contravened  
11 [Rule 701’s exclusion of lay opinion testimony that falls within the scope of Rule 702].” *Id.* at  
12 982. There, a witness “testified she could tell—based on her familiarity with marijuana, and given  
13 the taste and smell of the substance and its effect on her—that the substance she was smoking was  
14 marijuana.” *Id.* at 980. The court relied on the advisory committee notes to the 2000 amendment  
15 to Rule 701 regarding narcotics: “courts have permitted lay witnesses to testify that a substance  
16 appeared to be a narcotic, so long as a foundation of familiarity with the substance is established.”  
17 *Id.* at 982 (quoting Advisory Committee Note, 2000 Amendment, Fed. R. Evid. 701). The court  
18 concluded that the testimony was admissible, and was “based upon her personal knowledge, and  
19 her first-hand, multi-sensory interaction with the substance in question . . . .” *Id.* Here, Sabatini  
20 seeks to testify regarding only her sense of smell. But the smell of gasoline is within common  
21 knowledge, as illuminated by the government questioning Sabatini about her experience at local  
22 gas stations to lay the foundation for her testimony. And the government sufficiently demonstrated  
23 Sabatini’s familiarity with the smell in so doing.

24 H. Cervantes objects to Sabatini testifying both as an expert and as a lay witness providing  
25 an opinion regarding the smell of gasoline. “The [2000] amendment [to Rule 701] does not  
26 distinguish between expert and lay *witnesses*, but rather between expert and lay *testimony*.  
27 Certainly it is possible for the same witness to provide both lay and expert testimony in a single  
28 case.” Fed. R. Evid. 701, Advisory Committee Note, 2000 Amendment. Still, the Ninth Circuit

has cautioned in dicta: “A layman, which is what an expert witness is when testifying outside his area of expertise, ought not to be anointed with ersatz authority as a court-approved expert witness for what is essentially a lay opinion.” *White v. Ford Motor Co.*, 312 F.3d 998, 1008–09 (9th Cir. 2002) *opinion amended on denial of reh’g*, 335 F.3d 833 (9th Cir. 2003). In *United States v. Vera*, 770 F.3d 1232 (9th Cir. 2014), the Ninth Circuit explained that “law enforcement officers may offer lay and expert opinions about the meaning of intercepted phone calls, but the foundation laid for those opinions must satisfy Rules 701 and 702, respectively.” *Id.* at 1243. And “if a single officer offers both lay and expert testimony, the jury must be informed of the fact and significance of his dual roles.” *Id.* There, the court concluded that “it was plain error not to instruct the jury on how to appropriately evaluate [an officer’s] opinions and to fail to require an adequately specific foundation for those opinions.” *Id.* Further, the court explained ways in which the district court’s instructional error prejudiced the defendants:

Had the jury been instructed that the “facts” on which [an officer] based his expert opinions should not be considered for their truth but only to assess the strength of his opinions, the jury would have been better able to question for itself the reliability of [the officer’s] interpretations of wiretapped conversations. Likewise, if the court had instructed the jury that [the officer’s] lay opinion testimony was “not based on scientific, technical, or other specialized knowledge,” it would have deterred the jury from viewing [the officer’s] opinions as having the “imprimatur of scientific or technical validity.”

*Id.* at 1246 (citations omitted).

Here, Sabatini may testify regarding what she believed she smelled at the scene under Rule 701 despite testifying as an expert under Rule 702 regarding her application of the NFPA 921 methodology to investigate the causes and areas of origin of the fires. Although the Court recognizes potential risks that accompany Sabatini testifying as an “expert” in the eyes of the jury on matters outside her expertise, the Court finds that such risks should be alleviated by the government laying a proper foundation for Sabatini’s testimony in relation to what she smelled, the government questioning Sabatini about this matter separately from qualifying Sabatini as an expert, cross-examination, and proper jury instructions on how to evaluate her lay opinion and expert opinion testimony. *See Vera*, 770 F.3d at 1246.

**II. DNA EXPERT**

The Court previously denied H. Cervantes's motion to the extent the motion sought adequate Rule 16 disclosures regarding DNA evidence, but granted the motion as to the request for a *Daubert* hearing. (See Dkt. No. 728 at 16.) The government seeks to admit testimony from Forensic Serologist, Virginia Sadl, employed at the Serological Research Institute ("SERI") when conducting the DNA analysis for this case. Having considered the papers submitted by the parties and the testimony at the *Daubert* hearing, the Court finds that Sadl's testimony regarding the DNA and random match probability analyses is admissible.

Sadl is qualified to testify regarding the DNA and random match probability analyses in this case. Sadl received a Bachelor of Science degree in Biochemistry from the University of Waterloo in Ontario, and a Master of Science degree in Biology from McGill University. She was employed at SERI between 2011 and 2015, serving as a Forensic Serologist and a Technical Leader at various points during that time period. Between 2005 and 2011, she served as a criminalist in the Forensic Biology Unit at the San Bernardino County Sheriff's Department, Scientific Investigations Division. There, she performed and testified regarding DNA analyses. She has received training related to DNA analysis, including a "Future Trends in Forensic DNA Technology Seminar Series" in 2011, "Forensic DNA Analysis" in 2010, FBI DNA Auditor Training in 2009, and trainings on short tandem repeat (STR) analysis and the Applied Biosystems AB 7500 Real-Time PCR System Quantifiler Kit in 2007. She also completed "Population Statistics in Forensic DNA Analysis" and an STR analysis training in 2006, and completed Advanced DNA Extraction & Quantification with Real Time qPCR, Basic DNA Extraction and Quantification, and Case Approach to Biological Evidence trainings in 2005. In sum, Sadl's education, experience, and training qualifies her to testify as to the DNA analysis, typing, and population frequency estimates in this case.

H. Cervantes does not challenge the methodology by which Sadl determined that he was included as a possible contributor to the DNA samples at issue.<sup>9</sup> Instead, H. Cervantes challenges

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<sup>9</sup> Sadl performed a DNA analysis on twenty-seven items in this case. (See Dkt. No. 765-2, Amended Analytical Report, at NF-007474.) SERI's "typing system . . . relies on identifying small

Sadl’s methodology for determining for each DNA sample for which H. Cervantes was included as a possible contributor “the chance that . . . a single randomly-selected, unrelated individual would be included as a possible contributor to the sample DNA.” (*See* Dkt. No. 691-1, Sadl Dec. ¶ 2.) “The probability that another, unrelated, individual would also match the evidence sample is estimated by the frequency of that genotype in the relevant population(s).” (Dkt. No. 691-2, AmpFlSTR Identifiler PCR Amplification Kit User’s Manual, at 4-44.)

For random match probabilities, Sadl used the “Applied Biosystems, Inc. (ABI) allele frequency database,” and determined a frequency for “each of three . . . populations: U.S. Caucasian, African American and U.S. Hispanic.” (*See* Sadl Dec. ¶ 3.) Population samples and their sources in the database are:

African-American[:] 357 samples were provided by the Kentucky State Police and the Federal Bureau of Investigation.  
 U.S. Caucasian[:] 349 samples were provided by the Kentucky State Police and the Federal Bureau of Investigation.  
 U.S. Hispanic[:] 290 samples were provided by the Minnesota Bureau of Criminal Apprehension/Memorial Blood Center of Minneapolis and the Federal Bureau of Investigation.  
 Native American[:] 191 samples were provided by the Minnesota Bureau of Criminal Apprehension/Memorial Blood Center of Minneapolis.

(AmpFlSTR Identifiler PCR Amplification Kit User’s Manual, at 4-44.) The Manual lists allele frequencies (in percentages) for each population group. (*See id.* at 4-45–53.)

Sadl determined “the expected frequency of the set of markers (alleles) at 15 identified locations (loci) from [each sample of] DNA . . . .” (Sadl Dec. ¶ 2.) “Where there [wa]s genotype ambiguity at a locus, [Sadl added together] the possible genotype frequencies . . . before multiplying . . . the 15 frequencies.” (*Id.*) Next, Sadl multiplied those frequencies together to calculate the probability “that a single randomly-selected, unrelated individual would be included as a possible contributor to the sample DNA.” (*Id.*) “The rule that the joint probability of multiple independent events can be determined by multiplying the frequencies of the individual events is known as the product rule.” *United States v. Shea*, 957 F. Supp. 331, 336 (D.N.H. 1997) *aff’d*, 159

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specific sections of DNA wherein there are recognizable differences between people.” (*Id.* at NF-007482.) “Short Tandem Repeat (STR) markers are polymorphic DNA loci that contain a repeated nucleotide sequence. . . . STR loci can be amplified using the Polymerase Chain Reaction (PCR) process and the PCR products are then analyzed . . . .” (*Id.* at NF-007482–83)



1 F.3d 37 (1st Cir. 1998) (emphasis omitted); *see also id.* (“The product rule can be applied reliably  
2 in the manner described . . . only if the estimate of allele frequencies is reasonably accurate and the  
3 conditions in the population approximate what are known as Hardy-Weinberg equilibrium and  
4 linkage equilibrium.” (emphases omitted)). Generally, Sadl’s use of the product rule is reliable,  
5 and H. Cervantes does not challenge use of the rule, by itself. *See United States v. Pritchard*, 993  
6 F. Supp. 2d 1203, 1209–10 (C.D. Cal. 2014) (“The Ninth Circuit has held, albeit without a detailed  
7 discussion of the *Daubert* factors, that use of the product rule as a statistical methodology in DNA  
8 analysis passes muster under *Daubert*.”); *see also id.* at 1209–12 (applying *Daubert* factors to  
9 determine that application of the rule in accordance with a published report is a reliable  
10 methodology for “determining population frequency estimates”).

11 First, H. Cervantes challenges the manner in which Sadl performed her calculations. Sadl  
12 testified that she used a Microsoft Excel spreadsheet with formulas previously programmed into  
13 the spreadsheet. To the extent H. Cervantes challenges this use of the spreadsheet to perform allele  
14 frequency calculations, this argument is without merit. Sadl testified that SERI programs the  
15 spreadsheets to include the necessary formulas set out by the National Research Council,  
16 Commission on DNA Forensic Science (“NRC”) and the Scientific Working Group on DNA  
17 Analysis (“SWGDAM”). (*See* Dkt. No. 765, Government’s Response at 2.) Sadl also testified that  
18 SERI tests the spreadsheets and that the spreadsheets are subject to audit by the “American Society  
19 of Crime Laboratory Directors Laboratory Accreditation Board . . . as part of SERI’s accreditation  
20 process.” (*Id.*) H. Cervantes does not provide a basis from which to conclude that the spreadsheets  
21 as programmed are not reliable. Thus, H. Cervantes’s argument that Sadl’s use of the spreadsheets  
22 warrants exclusion is without merit.

23 Sadl determined “one estimated [allele] frequency, which is the weighted average  
24 frequency of the frequencies from each of . . . three . . . groups[—U.S. Caucasian, African  
25 American, and U.S. Hispanic].” (Sادل Dec. ¶ 3.) H. Cervantes contrasts this approach with one  
26 that another court described approvingly—“calculat[ing] the frequencies for each of three  
27 population groups—U.S. Caucasian, African American, and Southwestern Hispanic—and then  
28 report[ing] only the most common (defendant-friendly) frequency.” *Pritchard*, 993 F. Supp. 2d at

1211; (*see* Dkt. No. 698 at 5). That court explained that a 1996 report from the NRC, *The Evaluation of Forensic DNA Evidence*, “recommends use of the product rule, and further recommends that, where possible, the database for the person’s race should be used.” *Pritchard*, 993 F. Supp. 2d at 1211; *see also* *People v. Wilson*, 136 P.3d 864, 869 (Cal. 2006) (“If the race of the person who left the evidence-sample DNA is known, the database for the person’s race should be used; if the race is not known, calculations for all racial groups to which possible suspects belong should be made.” (quoting 1996 NRC Report, available at <http://www.nap.edu/catalog/5141.html>, Recommendation 4.1)). Although Sadl did not use the approach used in *Pritchard*, Sadl used databases for each of three population groups before calculating a weighted average. (*See* Dkt. No. 765-1 at NF-004158–59.) H. Cervantes does not demonstrate why Sadl calculating the weighted average would be unreliable and inadmissible and, to the extent H. Cervantes objects to use of a weighted average in addition to calculations for each population group, his arguments go to the weight, not admissibility, of her testimony.

To the extent H. Cervantes challenges the reliability of the population frequency data Sadl used, this argument also is without merit. Sadl used a population database containing “convenience samples.” “Ideally, the reference data set, from which profile frequencies are calculated, would be a simple random sample or a scientifically structured random sample from the relevant population.” 1996 NRC Report at 30. Still, the 1996 NRC Report authors were “confident that . . . convenience samples [taken from blood banks, paternity-testing laboratories, laboratory personnel, clients in genetic-counseling centers, law-enforcement officers, and people charged with crimes] are appropriate for forensic uses for two reasons.” *Id.*; *see Pritchard*, 993 F. Supp. 2d at 1210.

First, the loci generally used for identification are usually not parts of functional genes and therefore are unlikely to be correlated with any behavioral or physical traits that might be associated with different subsets of the population. Second, empirical tests have shown only very minor differences among the frequencies of DNA markers from different subpopulations or geographical areas.

1996 NRC Report at 30; *Pritchard*, 993 F. Supp. 2d at 1210. One court explained the means by which investigators may account for uncertainties in their analyses:

After considering empirical data comparing genotype frequencies observed in a number of aggregate population databases with genotype frequencies found in known regional and ethnic subpopulation databases, the [1996 NRC] report concludes that likely uncertainties caused by random error and undetected population substructuring can be conservatively accounted for if the database used in calculating the random match probability contains samples from “at least several hundred persons” and the estimate obtained by using the product rule is qualified by stating that the true value is likely to be within a factor of 10 above or below the estimated value.

*United States v. Shea*, 957 F. Supp. at 342 (footnote and citation omitted). Although “several hundred persons” should be included in a population database, “it has been suggested that relatively small databases, consisting of fifty or so individuals, allow statistically acceptable frequency estimation for the common alleles and that rare alleles can be assigned a minimum value, resulting in conservative genotype frequency estimates.” George Sensabaugh & D.H. Kaye, Non-Human DNA Evidence, 39 *Jurimetrics J.* 1, 16 n.48 (1998) (citing Ranajit Chakraborty, Sample Size Requirements for Addressing the Population Genetic Issues of Forensic Use of DNA Typing, 64 *Hum. Biology* 141, 156-57 (1992) & 1996 NRC Report at 125). Also, “the NRC report suggests that the uncertainty that arises ‘[i]f the database is small . . . can be addressed by providing confidence intervals on the estimates.’” *Id.* (quoting 1996 NRC Report at 125).

Here, Sadl used a database containing samples from U.S. Hispanics, Native Americans, African Americans, and U.S. Caucasians (AmpFISTR Identifiler PCR Amplification Kit User’s Manual, at 4-44). Although Sadl testified at the hearing that the database contained information for “Southwestern Hispanics,” her declaration indicates that the information was for “U.S. Hispanics.” (See Sadl Dec. ¶ 3.) *But see United States v. Pritchard*, 993 F. Supp. 2d 1203, 1210 (C.D. Cal. 2014) (noting that lab relied on two databases “published in peer-reviewed journals” that “contain . . . allele frequencies for various population subgroups, including U.S. Caucasians, African Americans, and Southwestern Hispanics”). Still, the database contained samples from 290 U.S. Hispanics, 191 Native Americans, and over 300 African Americans and U.S. Caucasians. (AmpFISTR Identifiler PCR Amplification Kit User’s Manual, at 4-44.) The Minnesota Bureau of Criminal Apprehension/Memorial Blood Center of Minneapolis and the Federal Bureau of Investigation provided the samples for the U.S. Hispanic population group. (*Id.*) And Sadl qualified her estimates by a factor of ten in either direction (ten times higher or lower than the

actual value) to account for uncertainty. *Cf. Shea*, 957 F. Supp. at 342 (citing the 1996 NRC Report for the fact that “likely uncertainties caused by random error and undetected population substructuring can be conservatively accounted for if the database used in calculating the random match probability contains samples from ‘at least several hundred persons’ and the estimate obtained by using the product rule is qualified by stating that the true value is likely to be within a factor of 10 above or below the estimated value” (footnote omitted)). Accordingly, Sadl’s use of the Applied Biosystems population database was reliable for purposes of admissibility.

Finally, H. Cervantes argues that Sadl during cross-examination failed to recognize the implications of a hypothetical in which a relative of H. Cervantes had ridden in the car from which DNA samples were taken. H. Cervantes cites the following SWGDAM Interpretation Guideline for analysts to consider alternate hypotheses if a relative could have been the source of a profile:

5.2.3 When a suspect’s profile has been determined to match the unknown profile, if the alternate hypothesis is that a relative of the suspect is in fact the source of the unknown profile, then all efforts should be undertaken to obtain a sample directly from the relative in question so that there is no need to rely on a probability estimate of a coincidental match. . . .

(Dkt. No. 762-4, SWGDAM 2010 at 14-15.) The government responds that H. Cervantes’s hypothetical omitted the fact that the relative in this case would be a female. (*See* Dkt. No. 765, Government’s Response at 3.) And Sadl testified that her DNA analysis revealed only male DNA in the car samples. (*See* Dkt. No. 765, Table of Results at NF-007480–81.) Accordingly, H. Cervantes’s argument does not affect the reliability of Sadl’s methodology.

### **III. RELIABILITY OF CELL PHONE LOCATION OPINIONS ON THE BASIS OF “FIELD EXPERIMENT”**

After considering Special Agent Nguyen’s supplemental declaration regarding cell tower location, sector, and azimuth data in December 2012 and those data from September 2011, the Court finds sufficient foundation for the government to use the results of its December 2012 “field experiment.”

Previously, this Court found that the delay between September 2011 and the December 2012 field experiments conducted by government agents was significant, and required additional foundation to account for the possibility that cell phone or antenna characteristics changed during

that time period. (Dkt. No. 728 at 5–6.)<sup>10</sup> Special Agent Nguyen since has submitted a supplemental declaration regarding the reliability of the field experiment. (*See* Dkt. No. 758.) That declaration indicates that the MetroPCS and Sprint cell towers at issue were located at the same locations at the time of the crime as at the time of the field experiment. (*See id.* at 2–3, 4–5.) Also, “[m]easurements were made . . . of the MetroPCS and Sprint cellular networks which provided service to the subject cellphones. The measurements were made using the JDSU E6474A-X Wireless Network Optimization Platform.” (*Id.* at 2.) The declaration further indicates that “cell tower locations and sector azimuths during the time frame of the crime were examined and compared to cell tower locations and sector azimuths during the time frame of the measurements.” (*Id.*) According to the government’s disclosures, the Court understands each cell tower to have three possible sector orientations (numbered 1–3 in the supplemental declaration), and azimuth to refer to the direction in which each cell tower is oriented (ranging from 0–360 degrees). The supplemental declaration indicates that the cell tower sector and azimuth measurements at the time of the crime matched those at the time of the field experiment. (*See id.* at 3–4, 5–6.) Accordingly, the Court **DENIES** H. Cervantes’s motion without prejudice to the defense raising specific objections at trial as the evidence is presented and with the limitations regarding the nature of the testimony and the need for foundation testimony the Court previously explained (Dkt. No. 728 at 4–8). The Court continues to note that the government does not seek to have its experts testify as to any precise location of any phone. (*See id.* at 5–6.)

#### IV. CONCLUSION

For the reasons above, the Court **DENIES** H. Cervantes’s motion to exclude arson expert testimony relating to burn patterns; smoke, heat, and fire damage in each room of the Coolidge Avenue apartment; indications of the occurrence of separate fires with separate causes in the

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<sup>10</sup> According to the government, “Nguyen made measurements using the JDSU E6474A-X Wireless Network Optimization Platform in the area of the homicide location and other pertinent locations in December 2012 throughout the day and again at night; to accomplish this field test, SA Nguyen used the JDSU drive-test to map the actual radio frequency within particular cell tower sectors and used MetroPCS and Sprint cell phones during this test.” (Dkt. No. 692 at 3.)

1 apartment; and elimination of specific possible fire causes in each room (Dkt. No. 668, 699). The  
2 Court **GRANTS** H. Cervantes's motion to exclude arson expert testimony relating to the smell of  
3 gasoline during the investigation, but **DENIES** the motion to the extent the arson expert provides lay  
4 opinion testimony regarding what she smelled and the jury is instructed appropriately. The Court  
5 finds inadequacies in the government's disclosure relating to this expert, but as discussed above,  
6 declines to sanction the government under Rule 16(a)(1)(G). The Court **DENIES** H. Cervantes's  
7 motion to exclude or limit government DNA related expert testimony (Dkt. No. 669). Finally, the  
8 Court **DENIES** H. Cervantes's motion to exclude or limit the testimony of FBI or Other Witnesses  
9 Testifying About Cell Phone Communications and Locations (Dkt. No. 664) without prejudice to  
10 the defense raising specific objections at trial as the evidence is presented and with the limitations  
11 regarding the nature of the testimony and the need for foundation testimony the Court previously  
12 explained (Dkt. No. 728 at 4–8).

13 This order terminates Docket Numbers 668, 699, 669, 664, 671, and 672.

14 **IT IS SO ORDERED.**

15  
16 Dated: December 1, 2015

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18 YVONNE GONZALEZ ROGERS  
19 UNITED STATES DISTRICT JUDGE  
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